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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/649,012   | 08/27/2003  | Noboru Taniguchi     | 10873.812USCI       | 5937             |
| 7590   | 01/14/2008  |                      |                     |                  |
| Hamre, Schumann, Mueller & Larson, P.C.<br>P.O. Box 2902-0902<br>Minneapolis, MN 55402 |             |                      | EXAMINER            | OLSEN, KAJ K     |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                 |                   |
|------------------------------|-----------------|-------------------|
| <b>Office Action Summary</b> | Application No. | Applicant(s)      |
|                              | 10/649,012      | TANIGUCHI, NOBORU |
| Examiner                     | Art Unit        |                   |
| Kaj K. Olsen                 | 1795            |                   |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 05 November 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1,3 and 14-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,3,14-16 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 3, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1 041 380 A2 (hereafter "EP '380").

4. Regarding claim 1, EP '380 discloses a hydrocarbon sensor (see col. 1, lines 5-6) comprising a substrate (1) made of a solid electrolyte (column 8, lines 41-48) that conducts protons (see col. 9, lines 37-44), and a pair of electrodes (2 and 3) formed on the substrate (see figs. 1A and 1B), wherein at least one electrode of the pair of electrodes contains Au and Al (column 3, line 52 - column 4, line 6), at least part of the Al is present in the at least one electrode as at least one selected from the group consisting of elemental aluminum and aluminum oxide (see fig. 3 and column 11, lines 7-12), at least one of the elemental aluminum

and aluminum oxide is contained in a mixed state in the at least one electrode (column 6, lines 37-41 and see fig. 3 and column 11, lines 7 - 38). EP '380 does not explicitly disclose the recited percentages of Au and Al but recognizes the percentages of Au and Al to be variables for optimization (column 6, line 49 - column 7, line 3). It would have been obvious to one of ordinary skill in the art to have optimized the recognized result effective variable as taught by EP '380 (column 6, line 49 - column 7, line 3). As held in *In re Aller* 105 USPQ 233,235 (CCPA 1955), "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation".

5. Regarding claim 3, EP '380 does not explicitly disclose the recited molar ratio of AuAl<sub>2</sub> and Au but recognizes the amount of AuAl<sub>2</sub> and Au to be variables for optimization (column 7, lines 9-18 and column 6, lines 49-52). It would have been obvious to one of ordinary skill in the art to have optimized the recognized result effective variable as taught by EP '380 (column 7, lines 9 - 18 and column 6, lines 49 - 52). As held in *In re Aller* 105 USPQ 233,235 (CCPA 1955), "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation".

6. Regarding claim 14, EP '380 discloses the hydrocarbon sensor wherein the AuAl<sub>2</sub> alloy and the at least one of elemental aluminum and aluminum oxide are contained in a mixed state in the at least one electrode (see fig. 3 and column 11, lines 7- 38).

#### ***Double Patenting***

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible

harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1, 3, and 14-16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 2 of U.S. Patent No. 6,638,406 in view of EP '380.

9. With respect to claims 1, 3, and 14, these claims remain unpatentable over the patent in view of EP '380 for the reasons set forth in the previous office action. With respect to new claims 15 and 16, this claim language appears to be verbatim to claims 1 and 2 of the patent and are thereby also unpatentable.

#### ***Response to Arguments***

10. Applicant's arguments and affidavit filed on 11-5-2007 have been fully considered but they are not persuasive. With respect to the affidavit and the discussion of the affidavit, applicant appears to have prepared the electrodes disclosed in EP '380 and analyzed the

composite ratios from the X-ray diffraction data and determined that the concentrations of Al and  $\text{Al}_2\text{O}_3$  in these three compositions well exceeds the amounts of "a" and "2b" of claim 1.

Although the examiner accepts the results arrived at by the applicant, the fact that these three compositions exceeded the "a" and "2b" amounts claimed does not mean that the prior art reference as a whole does not render obvious the claimed composition. In particular, paragraph 0029 of EP '380 anticipated that the preferred amount of Al/Au in the alloyed composition could be anywhere from 4/96 to 90/10 wt%. For a 4/96 wt% composition and dividing these weight percentages by the atomic mass for both Al and Au (26.98 and 196.97 g/mol respectively), the examiner calculates that atomic ratio of Al and Au in the 4/96 wt% composition would be 23/77 (i.e. there would be 23 Al atoms for every 77 Au atoms). The compositions analyzed by the applicant appear to be nowhere near this anticipated lower end of the atomic percentages. In particular, the examiner calculated the atomic ratios of Al/Au in compositions A, B, and C of affidavit Table 1 by determining the amount of Al by adding up the ratios of  $\text{AuAl}_2$ , Al, and  $\text{Al}_2\text{O}_3$  (multiplying both the  $\text{AuAl}_2$  and  $\text{Al}_2\text{O}_3$  by two because each unit of these compositions contains two units of Al), and determining the amount of Au by adding up the concentrations of  $\text{AuAl}_2$  and Au. The examiner excluded the contributions of  $\text{Au}_n\text{Al}_m$  because it has a small and undeterminable amount of Au and Al. The examiner found that Al/Au ratios in compositions A, B, and C were 122/36, 137/62, and 106/53 respectively. All three of these clearly exceed the lower limit of 23/77 anticipated by the teaching of EP '380. Composition C had lowest percentage of Al per Al+Au (67%), but was still far off the disclosed lower limit of EP '380 of 23% Al. The examiner further notes that apparent compositions of the electrodes in the instant invention fall within the anticipated composition range of EP '380. In particular, no. 5 in Table 1

of p. 11 discloses the molar composition of  $\text{AuAl}_2/\text{Au}/\text{Al}/\text{Al}_n\text{Al}_m$  as being 72/23/5/-. This would correspond to a Al/Au ratio of 149/95 or 61% Al, which is well within the range set forth by EP '380. Hence, the compositions analyzed by the applicant do not well represent the whole disclosed composition range of EP '380 and the fact that these analyzed compositions exceeded the claimed range of Al and  $\text{Al}_2\text{O}_3$  does not indicate that the disclosure of EP '380 as a whole would fail to render obvious the claimed subject matter. Moreover, the examiner's calculation appears to indicate that the electrode compositions relied on by the instant invention (e.g. example 5 discussed above) were already well within the composition range set forth by EP '380.

11. Applicant's arguments concerning the double patenting rejection appear to rely on the perceived failings of the teaching of EP '380. Because those arguments were not persuasive above, the double patenting rejection is being maintained.

### *Conclusion*

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Friday from 8:00 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AU 1795  
January 10, 2008



KAJ K. OLSEN  
PRIMARY EXAMINER